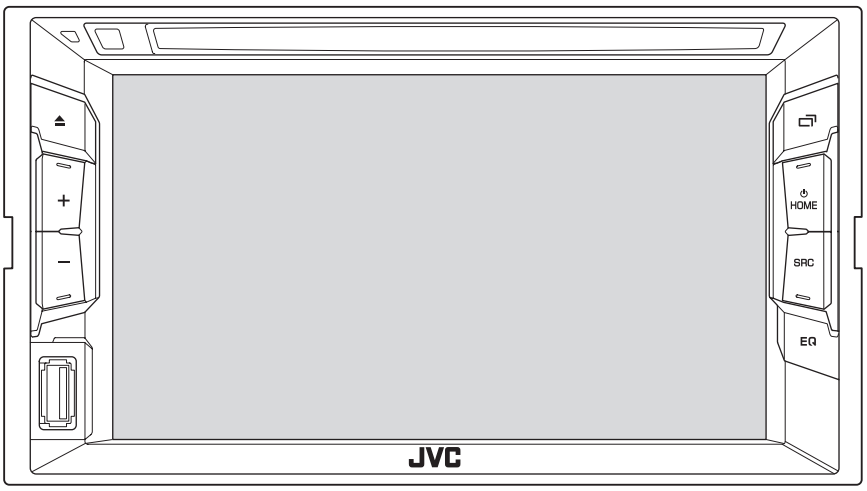
JVC

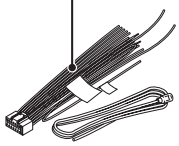
SERVICE MANUAL

MONITOR WITH DVD RECEIVER

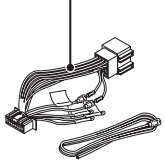
KW-V11E, KW-V11EE, KW-V11EU, KW-V11J, KW-V11JW, KW-V11U, KW-V11UI, KW-V215DBTE, KW-V21BTA, KW-V21BTE, KW-V21BTEE, KW-V21BTEU, KW-V21BTJ, KW-V21BTJW, KW-V21BTU, KW-V21BTUI



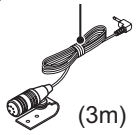
DC cord
(QAM1561-001)



DC cord
(QAM1562-001)



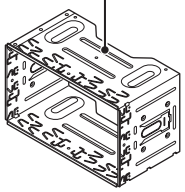
Microphone
(QAN0137-001)



(3m)

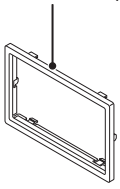
Remote control
(A7A-0006-00)

Mounting assy
(J2C-0006-00)

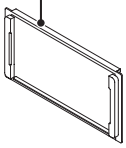


Car cable
(QAM1419-001)

Escutcheon
(B9H-0001-00)



Escutcheon
(B9H-0002-00)



Screw (M5x8)
(QYSTSP5008ZA) x6

Screw (M5x8)
(QYSSSP5008ZA) x6

Lever
(D1A-0007-00) x2

Lead free solder used in the board (material: Sn-Ag-Cu, melting point: 219 Centigrade)
Lead free solder used in the board (material: Sn-Cu, melting point: 230 Centigrade)

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No.MA601<Rev.001>
2014/10

SPECIFICATION

For US

Monitor section		
Picture Size (W × H)		6.2 inches (diagonal) wide 137.5 mm × 77.2 mm (5-7/16" × 3-1/16")
Display System		Transparent TN LCD panel
Drive System		TFT active matrix system
Number of Pixels		1 152 000 (800H × 480V × RGB)
Effective Pixels		99.99%
Pixel Arrangement		RGB striped arrangement
Back Lighting		LED
DVD player section		
D/A Converter		24 bit
Audio Decoder		Linear PCM/Dolby Digital/MP3/WMA/WAV
Video Decoder		MPEG1/MPEG2/DivX*/JPEG * Only for KW-V21BT Region 4/KW-V11 Region 4.
Wow & Flutter		Below Measurable Limit
Frequency Response	96 kHz Sampling	20 Hz to 22 000 Hz
	48 kHz Sampling	20 Hz to 22 000 Hz
	44.1 kHz Sampling	20 Hz to 20 000 Hz
Total Harmonic Distortion		0.010% (1 kHz)
Signal to Noise Ratio		99 dB (DVD-Video 96 kHz)
Dynamic Range		99 dB (DVD-Video 96 kHz)
Disc Format		DVD-Video/VIDEO-CD/CD-DA
Sampling frequency		44.1 kHz/48 kHz/96 kHz
Quantifying Bit Number		16/20/24 bit
USB interface section		
USB Standard		USB 2.0 Full Speed
Compatible Devices		Mass storage class
File System		FAT 12/16/32
Maximum Power Supply Current		DC 5 V ⎓ 1 A
D/A Converter		24 bit
Audio Decoder		MP3/WMA/WAV
Video Decoder		MPEG1/MPEG2/DivX*/JPEG * Only for KW-V21BT Region 4/KW-V11 Region 4.
Bluetooth section (For KW-V21BT)		
Technology		Bluetooth 2.1 + EDR
Frequency		2.402 GHz - 2.480 GHz
Output Power		+4 dBm (MAX), 0 dBm (AVE), Power Class2
Maximum Communication range		Line of sight approx. 10 m (32.8 ft)
Audio Codec		SBC
Profile		HFP (Hands Free Profile) 1.5 SPP (Serial Port Profile) 1.1 SDP (Service Discovery Profile) A2DP (Advanced Audio Distribution Profile) 1.2 AVRCP (Audio/Video Remote Control Profile) 1.3 OPP (Object Push Profile) PBAP (Phonebook Access Profile) 1.0 GAP (Generic Access Profile)

FM tuner section		
Frequency Range	With channel interval set to 200 kHz:	87.9 MHz to 107.9 MHz
	With channel interval set to 50 kHz	87.5 MHz to 108.0 MHz
Usable Sensitivity (S/N: 30 dB Dev 22.5 kHz)		7.2 dBf (0.63 μV/75 Ω)
Quieting Sensitivity (S/N: 46 dB Dev 22.5 kHz)		15.2 dBf (1.58 μV/75 Ω)
Frequency Response (± 3.0 dB)		30 Hz - 15 kHz
Signal to Noise Ratio		68 dB (MONO)
Selectivity (± 400 kHz)		≥ 80 dB
Stereo Separation		40 dB (1 kHz)
AM tuner section		
Frequency Range (10 kHz)		530 kHz to 1 700 kHz
Usable Sensitivity		29 dBμ
Video section		
Color System of External Video Input		NTSC/PAL
External Video Input Level (RCA/mini jack)		1 Vp-p/ 75 Ω
Video Output Level (RCA jack)		1 Vp-p/ 75 Ω
Audio section		
Maximum Power (Front & Rear)		50 W × 4
Full Bandwidth Power (Front & Rear)(4 Ω, 14.4 V, 1% THD)		22 W × 4
Preout Level		4 V/10 kΩ
Preout Impedance		≤ 600 Ω
Speaker Impedance		4 Ω - 8 Ω
Parametric Equalizer (5 Band)		Bass: 63 Hz, 80 Hz, 100 Hz, 125 Hz, ±10 dB Mid Bass: 200 Hz, 250 Hz, 315 Hz, 400 Hz, ±10 dB Mid: 0.63 kHz, 0.8 kHz, 1.0 kHz, 1.25 kHz, ±10 dB Mid High: 2.0 kHz, 2.5 kHz, 3.15 kHz, 4.0 kHz, ±10 dB High: 6.3 kHz, 8.0 kHz, 10.0 kHz, 12.5 kHz, ±10 dB
General		
Operating Voltage		14.4 V (10.5 V - 16 V allowable)
Maximum Current Consumption		10 A
Installation Dimensions (W × H × D)		178 mm × 100 mm × 162 mm (7-1/16" × 3-15/16" × 6-7/16") (Region 1) 182 mm × 111 mm × 160 mm (7-3/16" × 4-3/8" × 6-5/16") (Region 4)
Operational Temperature Range		-10°C to +60°C
Weight (Main Unit)		1.6 kg (3.6 lbs) (Region 1) 1.9 kg (4.2 lbs) (Region 4)

• Design and specifications are subject to change without notice.

SPECIFICATION

For Europe

Monitor section		
Picture Size (W × H)		6.2 inches (diagonal) wide 137.5 mm × 77.2 mm
Display System		Transparent TN LCD panel
Drive System		TFT active matrix system
Number of Pixels		1 152 000 (800H × 480V × RGB)
Effective Pixels		99.99%
Pixel Arrangement		RGB striped arrangement
Back Lighting		LED
DVD player section		
D/A Converter		24 bit
Audio Decoder		Linear PCM/Dolby Digital/MP3/WMA/WAV
Video Decoder		MPEG1/MPEG2/DivX/JPEG
Wow & Flutter		Below Measurable Limit
Frequency Response	96 kHz Sampling	20 Hz - 22,000 Hz
	48 kHz Sampling	20 Hz - 22,000 Hz
	44.1 kHz Sampling	20 Hz - 20,000 Hz
Total Harmonic Distortion		0.010% (1 kHz)
Signal to Noise Ratio		99 dB (DVD-Video 96 kHz)
Dynamic Range		99 dB (DVD-Video 96 kHz)
Disc Format		DVD-Video/VIDEO-CD/CD-DA
Sampling frequency		44.1 kHz/48 kHz/96 kHz
Quantifying Bit Number		16/20/24 bit
USB interface section		
USB Standard		USB 2.0 Full Speed
Compatible Devices		Mass storage class
File System		FAT 12/16/32
Maximum Power Supply Current		DC 5 V ⎓ 1 A
D/A Converter		24 bit
Audio Decoder		MP3/WMA/WAV
Video Decoder		MPEG1/MPEG2/DivX/JPEG
Bluetooth section (For KW-V21BT/KW-V215DBT)		
Technology		Bluetooth 2.1 + EDR
Frequency		2.402 GHz - 2.480 GHz
Output Power		+4 dBm (MAX), 0 dBm (AVE), Power Class2
Maximum Communication Range		Line of sight approx. 10 m
Audio Codec		SBC
Profile		HFP (Hands Free Profile) 1.5 SPP (Serial Port Profile) 1.1 SDP (Service Discovery Profile) A2DP (Advanced Audio Distribution Profile) 1.2 AVRCP (Audio/Video Remote Control Profile) 1.3 OPP (Object Push Profile) PBAP (Phonebook Access Profile)1.0 GAP (Generic Access Profile)

Digital tuner (DAB) section (For KW-V215DBT)	
Frequency Range	L-BAND: 1 452.960 MHz - 1 490.624 MHz BAND III: 174.928 MHz - 239.200 MHz
Sensitivity	-100 dBm
Signal to Noise Ratio	90 Db
DAB Aerial Connector	Connector type: SMB Output Voltage: 14.4 V (11 V - 16 V allowable) Maximum Current: <100 mA
FM tuner section	
Frequency Range (50 kHz)	87.5 MHz to 108.0 MHz
Usable Sensitivity (S/N: 30 dB Dev 22.5 kHz)	6.2 dBf (0.56 μV/75 Ω)
Quieting Sensitivity (S/N: 46 dB Dev 22.5 kHz)	15.2 dBf (1.58 μV/75 Ω)
Frequency Response (± 3.0 dB)	30 Hz - 15 kHz
Signal to Noise Ratio	68 dB (MONO)
Selectivity (± 400 kHz)	≥ 80 dB
Stereo Separation	40 dB (1 kHz)
LW tuner section	
Frequency Range (9 kHz)	153 kHz to 279 kHz
Usable Sensitivity	45 μV
MW tuner section	
Frequency Range (9 kHz)	531 kHz - 1 611 kHz
Usable Sensitivity	28.5 μV
Video section	
Color System of External Video Input	NTSC/PAL
External Video Input Level (RCA/mini jack)	1 Vp-p/ 75 Ω
Video Output Level (RCA jack)	1 Vp-p/ 75 Ω
Analog RGB input (Only for EU ver.)	0.7 Vp-p/75 Ω
Audio section	
Maximum Power (Front & Rear)	50 W × 4
Full Bandwidth Power (Front & Rear) (at less than 1% THD))	30 W × 4 (E Ver.) 22 W × 4 (EU Ver.)
Preout Level	4 V/10 k Ω
Preout Impedance	≤ 600 Ω
Speaker Impedance	4 Ω - 8 Ω
Parametric Equalizer (5 Band)	Bass: 63 Hz, 80 Hz, 100 Hz, 125 Hz, ±10 dB Mid Bass: 200 Hz, 250 Hz, 315 Hz, 400 Hz, ±10 dB Mid: 0.63 kHz, 0.8 kHz, 1.0 kHz, 1.25 kHz, ±10 dB Mid High: 2.0 kHz, 2.5 kHz, 3.15 kHz, 4.0 kHz, ±10 dB High: 6.3 kHz, 8.0 kHz, 10.0 kHz, 12.5 kHz, ±10 dB
General	
Operating Voltage	14.4 V (10.5 V - 16 V allowable)
Maximum Current Consumption	10 A
Installation Dimensions (W × H × D)	182 mm × 111 mm × 160 mm (E Ver.) 178 mm × 100 mm × 162 mm (EU Ver.)
Operational Temperature Range	-10°C - +60°C
Weight (Main Unit)	1.9 kg (E Ver.) 1.6 kg (EU Ver.)

• Design and specifications are subject to change without notice.

SPECIFICATION

For ASIA

Monitor section		
Picture Size (W × H)		6.2 inches (diagonal) wide 137.5 mm × 77.2 mm
Display System		Transparent TN LCD panel
Drive System		TFT active matrix system
Number of Pixels		1 152 000 (800H × 480V × RGB)
Effective Pixels		99.99%
Pixel Arrangement		RGB striped arrangement
Back Lighting		LED
DVD player section		
D/A Converter		24 bit
Audio Decoder		Linear PCM/Dolby Digital/MP3/WMA /WAV
Video Decoder		MPEG1/MPEG2/DivX/JPEG
Wow & Flutter		Below Measurable Limit
Frequency Response	96 kHz Sampling	20 Hz - 22 000 Hz
	48 kHz Sampling	20 Hz - 22 000 Hz
	44.1 kHz Sampling	20 Hz - 20 000 Hz
Total Harmonic Distortion		0.010% (1 kHz)
Signal to Noise Ratio		99 dB (DVD-Video 96 kHz)
Dynamic Range		99 dB (DVD-Video 96 kHz)
Disc Format		DVD-Video/VIDEO-CD/CD-DA
Sampling frequency		44.1 kHz/48 kHz/96 kHz
Quantifying Bit Number		16/20/24 bit
USB interface section		
USB Standard		USB 2.0 High Speed
Compatible Devices		Mass storage class
File System		FAT 12/16/32
Maximum Power Supply Current		DC 5 V ⎓ 1 A
D/A Converter		24 bit
Audio Decoder		MP3/WMA /WAV
Video Decoder		MPEG1/MPEG2/DivX/JPEG
Bluetooth section (For KW-V21BT)		
Technology		Bluetooth 2.1 + EDR
Frequency		2.402 GHz - 2.480 GHz
Output Power		+4 dBm (MAX), 0 dBm (AVE), Power Class2
Maximum Communication range		Line of sight approx. 10 m
Audio Codec		SBC
Profile		HFP (Hands Free Profile) 1.5 SPP (Serial Port Profile) 1.1 SDP (Service Discovery Profile) A2DP (Advanced Audio Distribution Profile) 1.2 AVRCP (Audio/Video Remote Control Profile) 1.3 OPP (Object Push Profile) PBAP (Phonebook Access Profile) 1.0 GAP (Generic Access Profile)

FM tuner section	
Frequency Range (50 kHz)	87.5 MHz to 108.0 MHz
Usable Sensitivity (S/N: 30 dB Dev 22.5 kHz)	6.2 dBf (0.56 μV/75 Ω)
Quieting Sensitivity (S/N: 46 dB Dev 22.5 kHz)	15.2 dBf (1.58 μV/75 Ω)
Frequency Response (± 3.0 dB)	30 Hz - 15 kHz
Signal to Noise Ratio	68 dB (MONO)
Selectivity (± 400 kHz)	≥ 80 dB
Stereo Separation	40 dB (1 kHz)
AM tuner section (For U and A Ver.)	
Frequency Range (9 kHz)	531 kHz to 1 611 kHz
Usable Sensitivity	29 dBμ
LW tuner section (For UI Ver.)	
Frequency Range (9 kHz)	153 kHz - 279 kHz
Usable Sensitivity	45 dBμ
MW tuner section (For UI Ver.)	
Frequency Range (9 kHz)	531 kHz - 1 611 kHz
Usable Sensitivity	28.5 dBμ
Video section	
Color System of External Video Input	NTSC/PAL
External Video Input Level (RCA/mini jack)	1 Vp-p/ 75 Ω
Video Output Level (RCA jack)	1 Vp-p/ 75 Ω
Analog RGB input (Only for KW-V21BTU)	0.7 Vp-p/75 Ω
Audio section	
Maximum Power (Front & Rear)	50 W × 4
Full Bandwidth Power (Front & Rear) (at less than 1% THD)	22 W × 4
Preout Level	4 V/10 kΩ
Preout Impedance	≤ 600 Ω
Speaker Impedance	4 Ω - 8 Ω
Parametric Equalizer (5 Band)	Bass: 63 Hz, 80 Hz, 100 Hz, 125 Hz, ±10 dB Mid Bass: 200 Hz, 250 Hz, 315 Hz, 400 Hz, ±10 dB Mid: 0.63 kHz, 0.8 kHz, 1.0 kHz, 1.25 kHz, ±10 dB Mid High: 2.0 kHz, 2.5 kHz, 3.15 kHz, 4.0 kHz, ±10 dB High: 6.3 kHz, 8.0 kHz, 10.0 kHz, 12.5 kHz, ±10 dB
General	
Operating Voltage	14.4 V (10.5 V to 16 V allowable)
Maximum Current Consumption	10 A
Installation Dimensions (W × H × D)	178 mm × 100 mm × 162 mm
Operational Temperature Range	-10°C - +60°C
Weight (Main Unit)	1.6 kg

• Design and specifications are subject to change without notice.

SECTION 1
PRECAUTION

1.1 Safety Precautions

(1) This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.

(2) Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturers warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.

(3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.

(4) The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after reassembling.

1.2 Warning

(1) This equipment has been designed and manufactured to meet international safety standards.
(2) It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
(3) Repairs must be made in accordance with the relevant safety standards.
(4) It is essential that safety critical components are replaced by approved parts.
(5) If mains voltage selector is provided, check setting for local voltage.

1.3 Caution

Burrs formed during molding may be left over on some parts of the chassis.
Therefore, pay attention to such burrs in the case of preforming repair of this system.

1.4 Critical parts for safety

In regard with component parts appearing on the silk-screen printed side (parts side) of the PWB diagrams, the parts that are printed over with black such as the resistor (▬), diode (▮) and ICP (●) or identified by the " ⚠ " mark nearby are critical for safety. When replacing them, be sure to use the parts of the same type and rating as specified by the manufacturer.
(This regulation dose not Except the J and C version)

1.5 Remote control

The Lithium battery is in danger of explosion if replaced incorrectly. Replace it only with the same or equivalent type.

1.6 Preventing static electricity

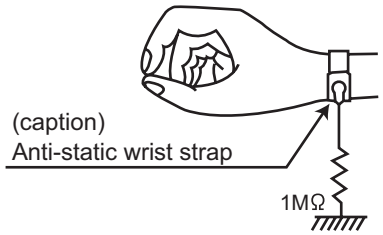
Electrostatic discharge (ESD), which occurs when static electricity stored in the body, fabric, etc. is discharged, can destroy the laser diode in the traverse unit (optical pickup). Take care to prevent this when performing repairs.

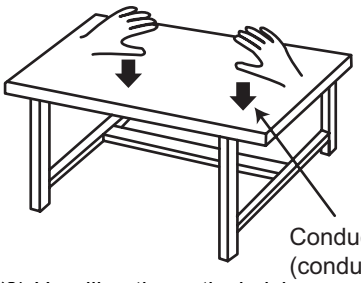
1.6.1 Grounding to prevent damage by static electricity

Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as laser products.
Be careful to use proper grounding in the area where repairs are being performed.

(1) Ground the workbench
Ground the workbench by laying conductive material (such as a conductive sheet) or an iron plate over it before placing the traverse unit (optical pickup) on it.

(2) Ground yourself
Use an anti-static wrist strap to release any static electricity built up in your body.





(3) Handling the optical pickup
- In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition.
(Refer to the text.)
- Do not use a tester to check the condition of the laser diode in the optical pickup. The tester's internal power source can easily destroy the laser diode.

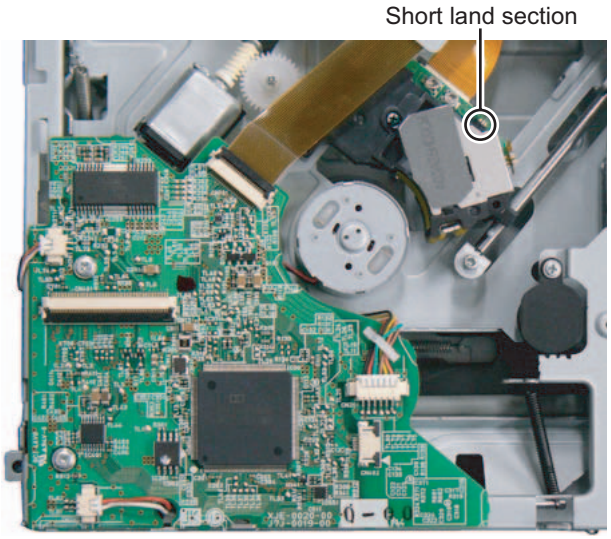
1.7 Handling the traverse unit (optical pickup)

(1) Do not subject the traverse unit (optical pickup) to strong shocks, as it is a sensitive, complex unit.
(2) Cut off the shorted part of the flexible cable using nippers, etc. after replacing the optical pickup. For specific details, refer to the replacement procedure in the text. Remove the anti-static pin when replacing the traverse unit. Be careful not to take too long a time when attaching it to the connector.
(3) Handle the flexible cable carefully as it may break when subjected to strong force.
(4) I t is not possible to adjust the semi-fixed resistor that adjusts the laser power. Do not turn it.

1.8 Attention when traverse unit is decomposed

***Please refer to "Disassembly method" in the text for the pickup unit.**

- Apply solder to the short land sections before the FPC wire is disconnected from the connector on the DVD mecha board. (If the FPC wire is disconnected without applying solder, the pickup may be destroyed by static electricity.)
- In the assembly, be sure to remove solder from the short land sections after connecting the FPC wire.



1.9 Important for laser products

1.CLASS 1 LASER PRODUCT

2.CAUTION :
(For U.S.A.) Visible and/or invisible class II laser radiation when open. Do not stare into beam.
(Others) Visible and/or invisible class 1M laser radiation when open. Do not view directly with optical instruments.

3.CAUTION : Visible and/or invisible laser radiation when open and inter lock failed or defeated. Avoid direct exposure to beam.

4.CAUTION : This laser product uses visible and/or invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.

5.CAUTION : If safety switches malfunction, the laser is able to function.

6.CAUTION : Use of controls, adjustments or performance of procedures other than those specified here in may result in hazardous radiation exposure.

⚠ ***CAUTION*** **Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.**

(For U.S.A.)
CAUTION : Visible and/or invisible class II laser radiation when open. Do not stare into beam.
(Others)
CAUTION : Visible and/or invisible class 1M laser radiation when open. Do not view directly with optical instruments

ACHTUNG: Sichtbare und/oder unsichtbare Laserstrahlung der Klasse 1M bei offenen Abdeckungen. Nicht direkt mit optischen Instrumenten betrachten.

ATTENTION: Rayonnement laser visible et/ou invisible de classe 1M une fois ouvert. Ne pas regarder directement avec des instruments optiques.

VOORZICHTIG: Zichtbare en/of onzichtbare klasse 1M laserstralen indien geopend. Bekijk niet direct met optische instrumenten.

ATTENZIONE: Radiazione laser in classe 1M visibile e/o invisibile quando aperto. Non osservare direttamente con strumenti ottici.

VARNING: Synlig och/eller osynlig laserstrålning, klass 1M, när denna del är öppnad. Betrakta ej strålen med optiska instrument.

VARO!: Avattaessa olet alttiina nakyvalle ja/tai näkymättömälle luokan 1M lasersateilylle. Älä tarkastele sitä optisen laitteen läpi.

ADVARSEL: Synlig og/eller usynlig klasse 1M-laserstråling ved åbning. Se ikke direkte med optiske instrumenter.

AVISO: Radiación láser de clase 1M visible y/o invisible cuando está abierto. No mirar directamente con instrumental óptico.

PRECAUÇÃO: Radiação laser de classe 1M visível e/ou invisível quando aberto. Não olhe directamente com instrumentos ópticos.

PRECAUÇÃO: Radiação laser de classe 1M visível e/ou invisível quando aberto. Não olhe diretamente com instrumentos óticos.

ПРЕДУПРЕЖДЕНИЕ: В открытом состоянии происходит видимое и/или невидимое излучение лазера класса 1M. Не смотрите непосредственно в оптические инструменты.

UWAGA: Otwarcie spowoduje narażenie na widzialne i/lub niewidzialne promieniowanie lasera klasy 1M. Nie patrzeć bezpośrednio w przyrządy optyczne.

UPOZORNĚNÍ: Při otevření vydává viditelné popř. neviditelné laserové ozáření třídy 1M. Nedívejte se do otvoru přímo s optickými nástroji.

FIGYELMEZTETÉS: Látható és/vagy láthatatlan 1M osztályú sugárzás nyitott állapotban. Ne nézze közvetlenül optikai műszerekkel.

注意：打開蓋板可能會產生可見或不可見的 1M 級鐳射。
不要使用光學儀器直接進行窺視。

注意：打开盖板可能会产生可见或不可见的 1M 级镭射。
不要使用光学仪器直接进行窥视。

تنبيه: يوجد إشعاع ليزري مرئي و/أو غير مرئي من الفئة 1M عندما يكون الجهاز مفتوحاً. تجنب النظر مباشرة داخل الجهاز باستخدام أدوات بصرية.

احتياط: هنگامی که باز گردد، تشعشع مرئی و یا نامرئی کلاس 1M لیزر وجود دارد. با لوازم چشمی مستقیماً به آن نگاه نکنید.

주의: 개방하면 가시 및/또는 비가시 클래스 1M 레이저 방사선이 나옵니다. 광학 기구로 직접 들여다보지 마십시오.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

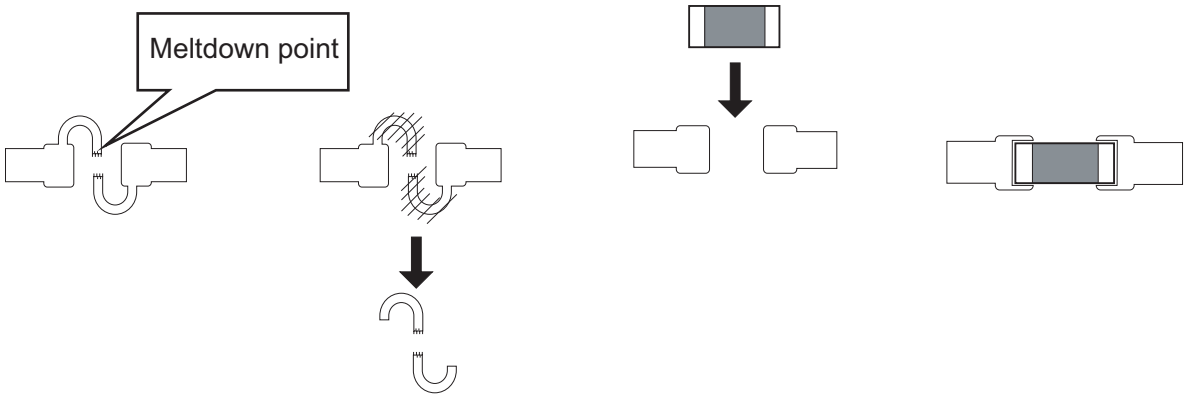
2.1 How to repair a fuse pattern

2.1.1 Purpose of fuse pattern

In order to prevent serious damage on the circuit, fuse pattern is prepared on the GND line of RCA Terminal. This damage may take due to improper part replacement with a external equipment via RCA line.

2.1.2 Repair Procedure

(1) Check the shorted circuit at the meltdown point.
Need to clean up if the shorted circuit or carbonization happen at the fuse pattern.
(2) Add following parts on the fuse pattern.
(3) Check output level.



Parts Number	SPEC
F53-0513-08	4A

2.1.3 After finished repair

Due to improper part replacement, this meltdown occurs.
Thus please notice following information when the unit is return to your customer.
Things to be checked before installing the unit.
(1) Check the GND line of external amplifier or other equipment which must connect properly.
(2) Check whether the GND line is not short-circuited with the battery terminal. (do not short-circuit these lines)

2.2 COMPONENTS DESCRIPTION

2.2.1 MAIN PWB

Ref. No.	Application / Function	Operation / Condition / Compatibility
IC1	Regulator	System DC Regulator IC
IC111	Regulator	D3.3V DCDC convertor IC
IC131	Regulator	Mecha8V DCDC convertor IC
IC151	Regulator	22V/-20V DCDC convertor IC
IC171	Regulator	D5.8V DCDC convertor IC
IC172	Hi-side SW	Current limit
IC173	Regulator	For USB5V Regulator IC
IC174	Regulator	For Mecha5V Regulator IC
IC201	Power IC	Power AMP
IC301	Electric Vol IC	Audio Vol Control, Audio Signal Select
IC341	Isolation Amp	For iPod-V
IC351	Video selector IC	Video selector to LCD
IC361	Video selector IC	Video selector to VOUT
IC362	Video buffer	VOUT Video driver with LPF
IC401	TUNER IC	TUNER IC
IC471	Regulator	For CD5V Regulator IC
IC501	MCU IC	System control IC
IC502	Voltage detect IC	Reset signal generate at 2.4V
IC503	EEPROM	Memory
IC711	AND Logic IC	Navi(SXI) TX 3.3V→ 5.0V convert
IC721	AND Logic IC	Navi(SXI) RX 5.0V→ 3.3V convert
IC801	MCU IC	DAB control IC
Q31	Transistor	SURGE_DET control
Q32	Transistor	SURGE_DET control
Q33	Transistor	SURGE_DET control
Q34	Transistor	SURGE_DET control
Q35	Transistor	BU_DET control
Q36	Transistor	BU_DET control
Q37	Transistor	BU_DET control
Q41	Transistor	ACC_DET control
Q42	Transistor	ACC_DET control
Q43	Transistor	ACC_DET control
Q51	Transistor	ILUMI control
Q91	Transistor	Parking control

Ref. No.	Application / Function	Operation / Condition / Compatibility
Q92	Transistor	Parking control
Q93	Transistor	Parking control
Q94	Transistor	Reverse control
Q101	SW FET	SW14V ON/OFF
Q102	Transistor	SW14V control
Q105	Transistor	SW14V control
Q151	SW FET	DCDC SW FET (22V, -22V)
Q252	Transistor	PRE_OUT_Mute control
Q261	Transistor	PRE_OUT_Mute
Q262	Transistor	PRE_OUT_Mute
Q263	Transistor	PRE_OUT_Mute
Q264	Transistor	PRE_OUT_Mute
Q265	Transistor	PRE_OUT_Mute
Q511	Transistor	RESET MUTE control
Q512	Transistor	RESET MUTE
Q513	Transistor	DET MUTE
Q521	Transistor	KEY IN DET
Q591	Transistor	SW3.3V control
Q592	Transistor	SW3.3V control
Q601	Transistor	SI control
Q611	Transistor	TOUCH control
Q612	Transistor	TOUCH control
Q613	Transistor	TOUCH control
Q614	Transistor	TOUCH control
Q761	MOS FET	STREMO control
Q762	Transistor	STREMO control
Q771	MOS FET	STREMO control

2.2.2 SWITCH PWB

Ref. No.	Application / Function	Operation / Condition / Compatibility
IC101	Remote control module	Remote control sensor
Q102	buffer	LED buffer

2.2.3 VIDEO PWB

Ref. No.	Application / Function	Operation / Condition / Compatibility
IC101	Chroma gamma T/C Scaller	Chroma gamma T/C Scaller
IC102	128Mbit SDRAM IC	SDRAM for Image signal preservation
IC103	64Mbit FLASH ROM	FLASH ROM for MN103SH23
IC104	64Mbit FLASH ROM	FLASH ROM for MN103SH23
IC105	Regulator	1.2V Regulator IC
IC301	Regulator	9.2V Regulator IC
IC302	OP-AMP X 2	VCOM AMP
Q101	SW	NAVI vsync control
Q201	buffer	VIDEO buffer
Q202	buffer	VIDEO buffer
Q203	buffer	VIDEO buffer
Q204	buffer	VIDEO buffer
Q205	SW	KEY_LED power control
Q206	SW	KEY_LED power control
Q261	SW (KW-V only)	KEY LED Constant current circuit
Q302	Voltage Drop	Voltage Drop for input of 9.2V Regulator
Q305	Voltage Drop	Voltage Drop for 18V
Q306	SW	Switch for 18V
Q307	SW	Switch for 18V
Q308	Voltage Drop	Voltage Drop for -6V
Q309	Voltage Drop	Voltage Drop for -6V
Q310	SW	Switch for -6V
Q311	SW	Switch for -6V
Q302	SW	Switch for -6V
Q401	LCD Backlight lighting	LCD Backlight Constant current circuit
Q402	LCD Backlight lighting	LCD Backlight Constant current circuit
Q403	LCD Backlight lighting	LCD Backlight Constant current circuit
Q404	LCD Backlight lighting	LCD Backlight Constant current circuit
Q405	LCD Backlight lighting	LCD Backlight Constant current circuit
Q406	LCD Backlight lighting	LCD Backlight Constant current circuit
Q407	LCD Backlight lighting	LCD Backlight Constant current circuit
Q408	LCD Backlight lighting	LCD Backlight Constant current circuit
Q409	LCD Backlight lighting	LCD Backlight Constant current circuit

2.2.4 DAB TUNER PWB

Ref. No.	Application / Function	Operation / Condition / Compatibility
IC1	FM/AM Tuner IC	FM/AM Tuner & HD blending
IC2	LOW Tuner IC	Low IF Tuner
IC3	DAB decoder	DAB signal processing
IC4	Serial Flash memory	Boot code storage for Si4613
IC5	Regulator	1.2V Regulator IC
IC6	Regulator	1.8V Regulator IC
IC7	Regulator	1.8V Regulator IC

SECTION 3
DISASSEMBLY

3.1 Main body

3.1.1 Removing the VIDEO PWB (See Fig.1 to 5)

(1) Remove the 1 screw **A**. (See Fig.1)

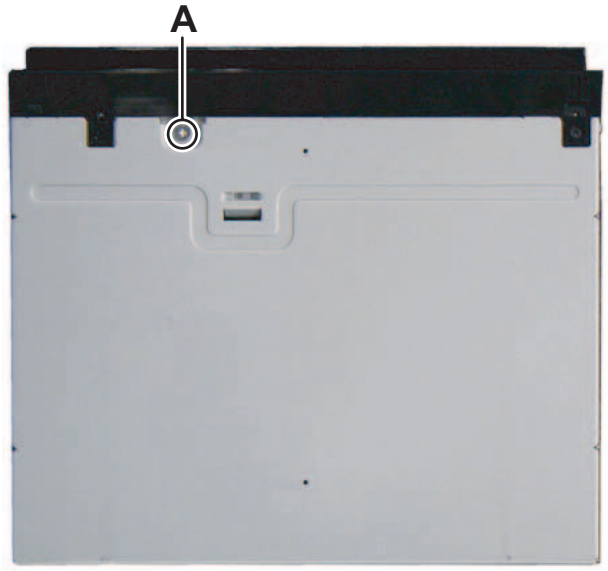


Fig.1

(2) Remove the 2 screws **B**. (See Fig.2)

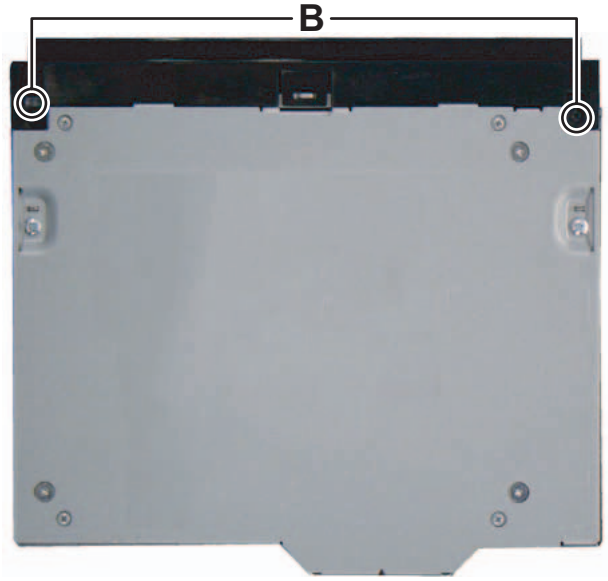


Fig.2

(3) Remove the 2 screws **C** and 3 hooks, and remove the FRONT PANEL ASS'Y. (See Fig.3)

Fig.3

(4) Disconnect the wires from CN201 and CN801. (See Fig.4)

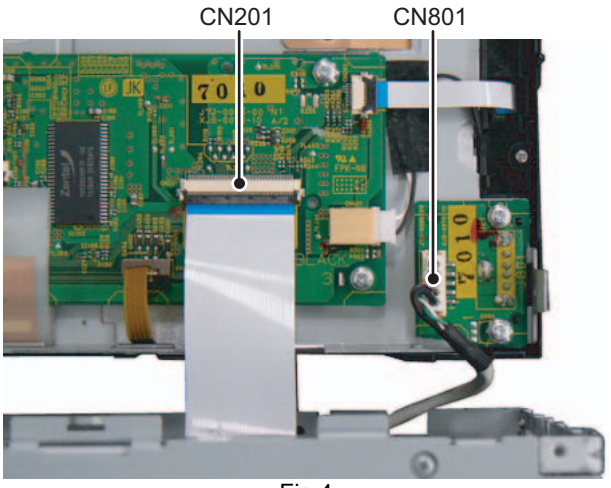


Fig.4

(5) Disconnect the wires from CN202, CN203, CN301, CN401 and CN402. (See Fig.5)

(6) Remove the 4 screws **D**, and remove the VIDEO PWB (1/2). (See Fig.5)

(7) Remove the 2 screws **E**, and remove the VIDEO PWB (2/2). (See Fig.5)

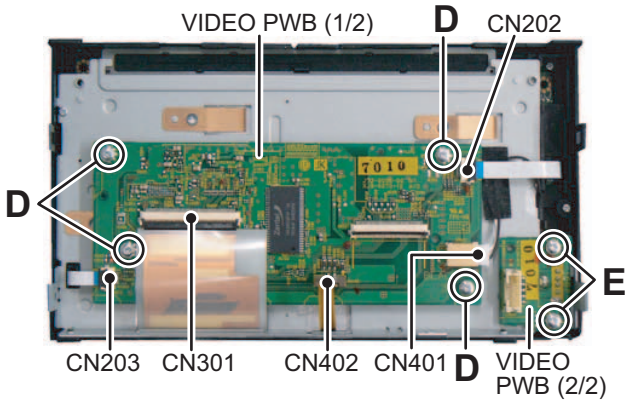


Fig.5

3.1.2 Removing the SWITCH PWB. (See Fig.6 and 7)

(1) Remove the 2 screws **F** and 1 screw **G**, and remove the BRACKET. (See Fig.6)

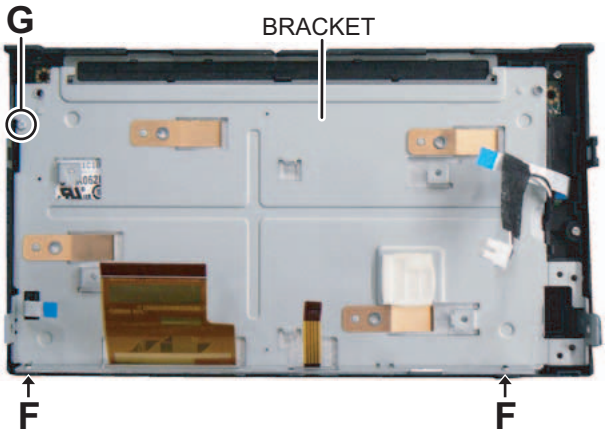


Fig.6

(2) Remove the 4 screws **H**, and remove the GUIDE(L/R). (See Fig.7)

(3) Remove SWITCH PWB(1/2) and SWITCH PWB(2/2). (See Fig.7)

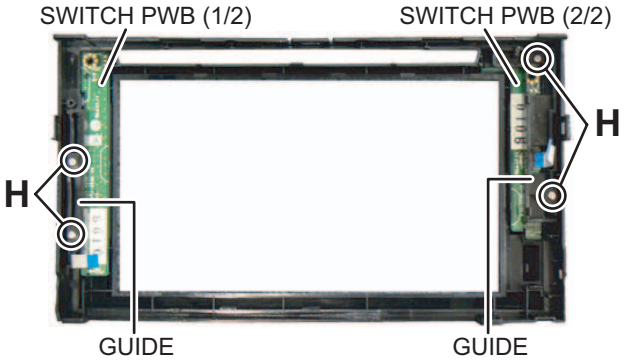


Fig.7

3.1.3 Removing the DVD MECHA ASS'Y (See Fig.8 to 11)

(1) Remove the 3 screws **J** and 2 screws **K**, and remove the HEATSINK. (See Fig.8)

(2) Remove the 2 screws **L**. (See Fig.8)

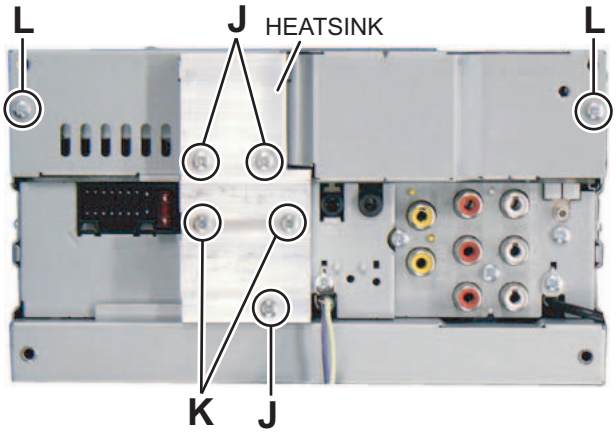


Fig.8

(3) Remove the 2 screws **M**, and remove the TOP PLATE. (See Fig.9)

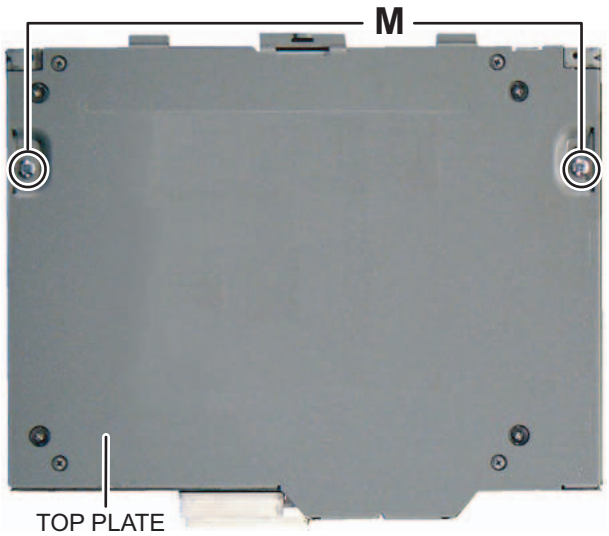


Fig.9

(4) Remove the 4 screws **N**, and remove the DVD MECHA ASS'Y. (See Fig.10)

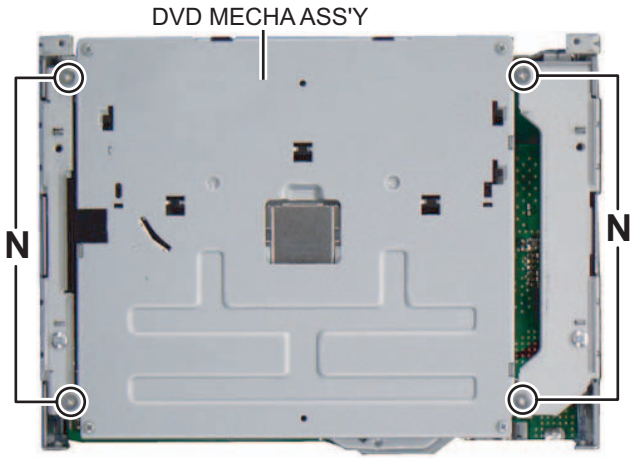


Fig.10

(5) Disconnect the FFC wire from CN401. (See Fig.11)

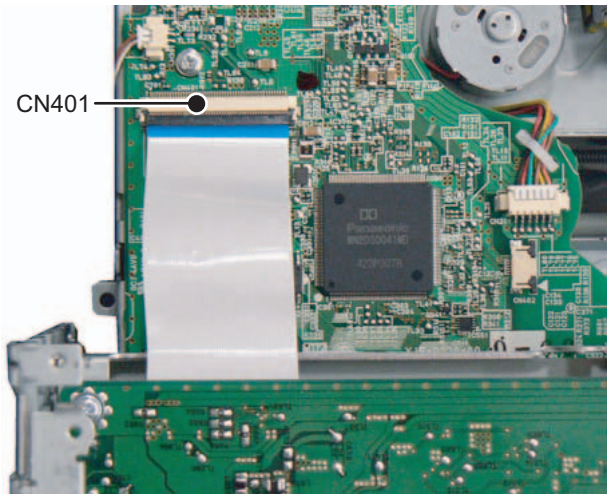


Fig.11

3.1.4 Removing the MAIN PWB (See Fig.12 to 14)

(1) Remove the 2 screws **P** and 1 screw **Q**. (See Fig.12)

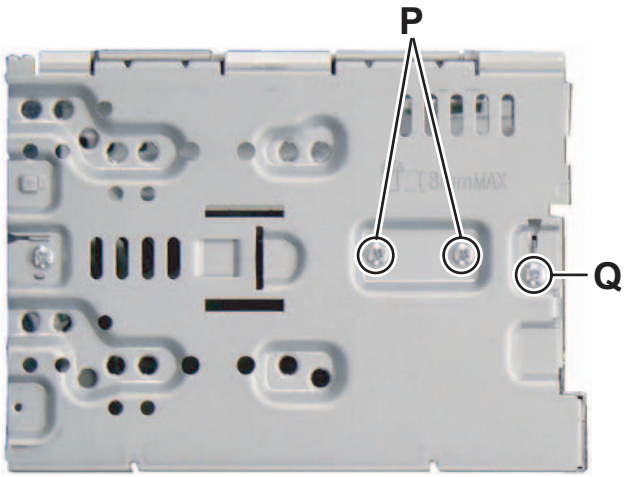


Fig.12

(2) Remove the 1 screw **R**. (See Fig.13)

Fig.13

(3) Remove the 2 screws **S**, and remove the MAIN PWB. (See Fig.14)

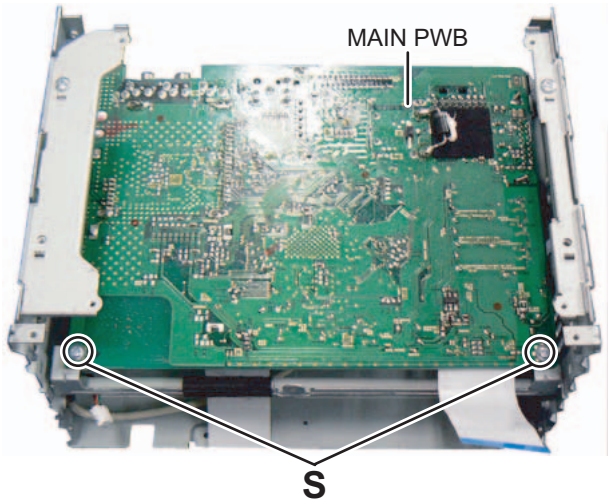


Fig.14

3.1.5 Removing the DAUGHTER PWB (See Fig.15)

(1) Disconnect the FFC wire from CN501.

(2) Remove the 2 screws **T**, and remove the DAUGHTER PWB.

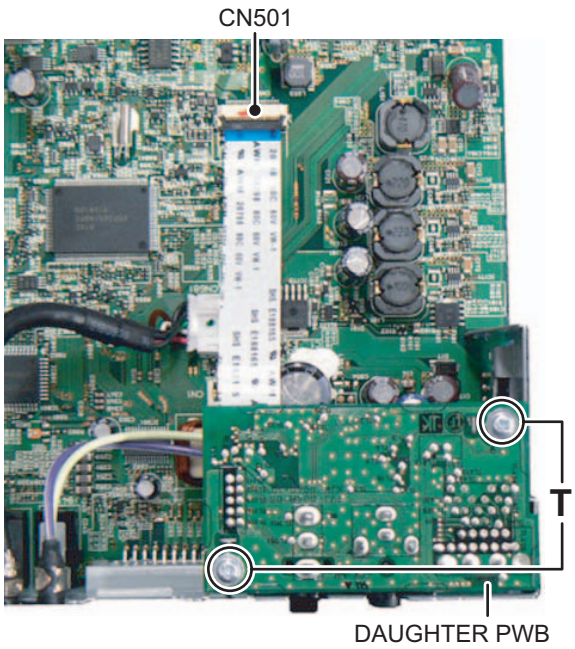


Fig.15

3.2 DVD mechanism assembly

3.2.1 Removing the DVD MECHA PWB (See Fig.1)

(1) Solder the short land on the PICK UP.

(2) Disconnect the FPC or Connector wires from CN101, CN201, CN202 and CN301.

(3) Remove the 2 screws **A** and remove the DVD MECHA PWB.

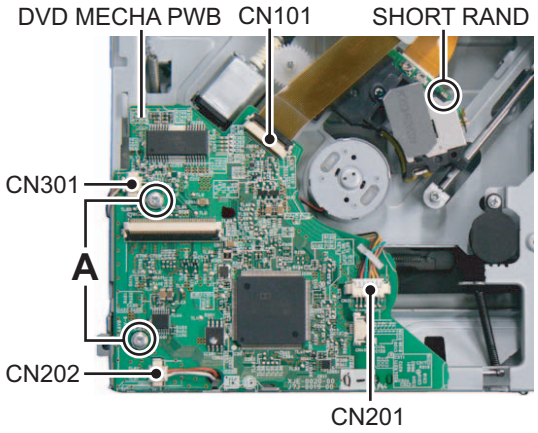


Fig.1

3.2.2 Removing the ROLLER ASSY. (See Fig.2 and 3)

(1) Remove the 4 screws **B**, and remove the TOP COVER. (See Fig.2)

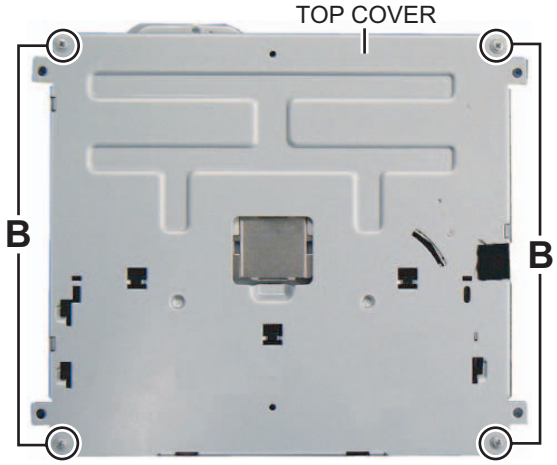


Fig.2

(2) Remove the 2 springs. (See Fig.3)

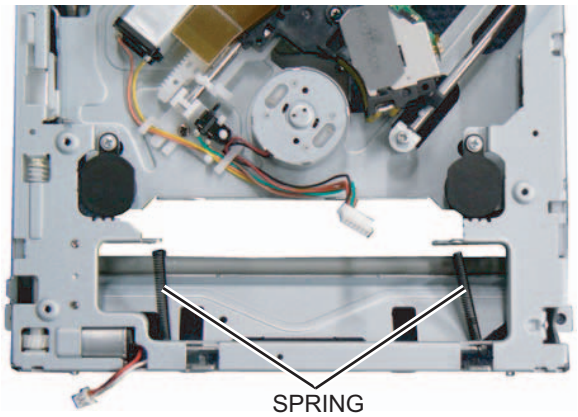


Fig.3

(3) Remove the 1 screw **C**, and remove the ROLLER ASSY. (See Fig.4)

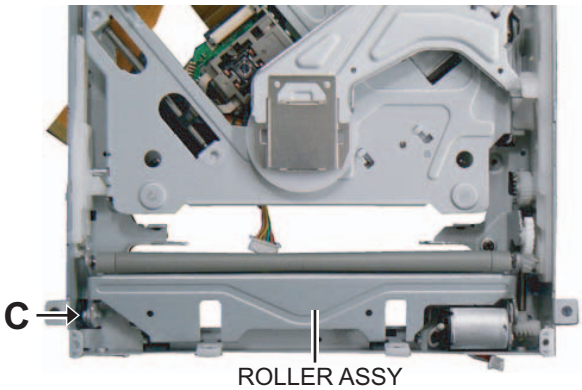


Fig.4

SECTION 4
ADJUSTMENT

4.1 Test Mode

4.1.1 List of special modes

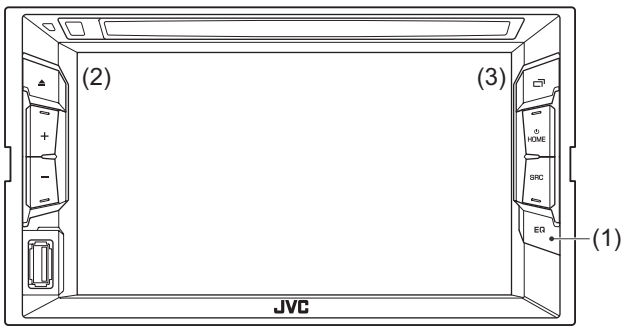
Mode name	Description	Key used
TUNER span switching	Switches TUNER frequency step/span.	Press and hold the [DISP] key and [EJECT] key, and press the [RESET] key.
Memory clear	Clears the backup memory and installer memory.	INITIALIZE inside the Setup menu (INITIALIZE in the service mode)
SS mode	Special service mode that is entered from the production mode.	Press and hold the [EQ] key and [DISP] key, and press the [RESET] key.
Service mode	Mode used by engineers or servicing personnel. Note: Confirm that the Bluetooth is not connected.	While pressing the [EQ] key, touch upper left corner of the touch panel within 0.5 seconds, and then touch upper right corner of the touch panel within 2 seconds.
Opening Customize Mode (and) Setting Rewrite mode	Mode used by sales and retail. Overwrites the start-up screen with DISC/USB. Overwrites the initial settings after factory shipment. Example: DEMO=OFF, NAVI=ON, etc.	While pressing the [EQ] key, touch lower left corner of the touch panel within 0.5 seconds, and then touch lower right corner of the touch panel within 2 seconds.
Force EJECT	Mode to use when the DISC cannot be ejected.	Press and hold the EJECT key for 10 seconds.

4.2 Service Mode

4.2.1 Switching to service mode

Note: Confirm that the Bluetooth is not connected.

- While pressing the [EQ] key (1), touch upper left corner (2) of the touch panel within 0.5 seconds, and then touch upper right corner (3) of the touch panel within 2 seconds.

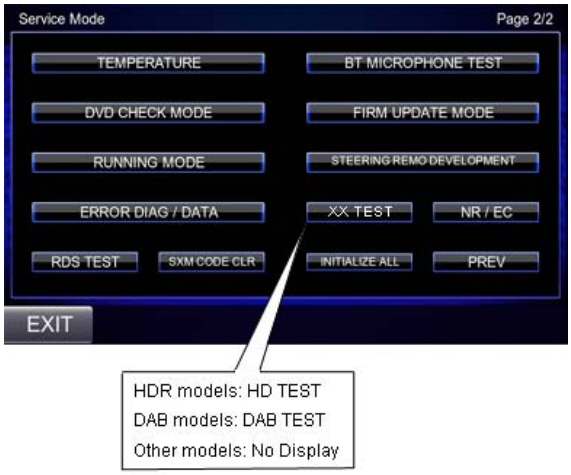


4.2.2 Display specifications

Service Mode Page1 <DAB MODEL>

Service Mode Page1 <Except DAB MODEL>

Service Mode Page2



[NEXT] key: Switch from Page 1 → Page 2.
[PREV] key: Switch from Page 2 → Page 1.
[EXIT] key: Exit the Service Mode and return to the normal screen.

Text	Description
SYS *.*** ****	Display of system controller version and JVM number
APP *.*.***	Display of APP u-controller + design data version
DATA ****	Display of Font data version
DISC ****	Display of DISC mecha module version
Macro ****	Display of Macrovision version
DivX ****	Display of DviX version
BT ****	Display of BT module Firmware version
Span *	Display of Span selection status for Tuner (displayed as NA or SA or EU or ASIA or BR or TN or JP)
Type	Destination information
Model	Model Information
DISC-Area	DISC mecha module destination information
Region	Region code
S.NO	Serial number
DATA1 ****	Display of opening data's version (Commercially=”1000”, DOP=”DOP”)
DATA2 ****	Display of wallpaper data's version (Commercially: ”1000”, DOP: ”DOP”)
DATA3 ****	Display of steering remote control threshold version Displays the version number when threshold data is written using USB. For DOP models, display as follows as the fixed value is retained from the beginning. Commercially support model: “0001” Commercially non support model: “-” HONDA: “KC” MAZDA: “KF” MITSUBISHI: “KG” ISUZU: “KJ NISSAN1: “KS1” NISSAN2 “KS2” TOYOTA: “KL”
DATA4 ****	Display of DEMO image version (Commercially=”1000”)
DAB ****/********	Display of DAB module version
HDR ********	Display of HD-Radio module version

4.2.2.1 INITIALIZE ALL

Process (1) to (4) in sequence.

(1) Initialization of system controller EEPROM
Backup memory, user profiles 1 to 3
Tuner Area setting
Error history

(2) Initialization of DISC module EEPROM (Initialize to normal)
Send [Arg0: 9C, Arg1: 06, Arg2: 00] (initialize EEPROM to normal) to DISC module
Receive [Arg0: AA Arg1: 01] from DISC module
Receive [Arg0: AA Arg1: 09 Arg2: ** Arg3: **] from DISC module

(3) Initialization of Bluetooth module EEPROM

Note:
Before performing Initialize All, turn off BT pairing mode and voice-recognition mode. Failure to do so will result in error during initialization.

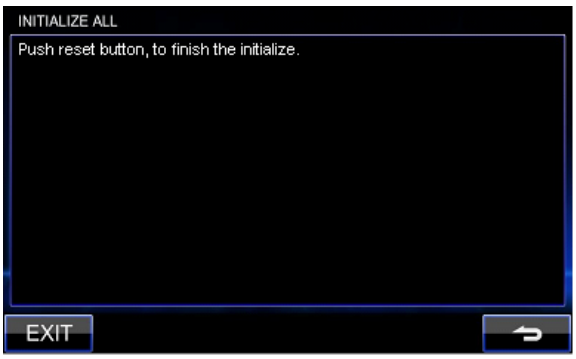
(4) Initialization of user-captured wallpaper area
Clear the APP u-controller F.ROM user-capture area and reset to the initial state (all black).

■Data not cleared■

- Monitor adjustment data (panel Flash ROM)
- Touch panel adjustment data / Tuner adjustment data / Tuner span information / serial no. (Syscom EEPROM)
- No. of power-on counts (Syscom EEPROM)
- No. of eject counts (DISC mecha EEPROM)

<While executing INITIALIZE>

<When INITIALIZE completed normally>



Below screen is retained and normal screen is not displayed.

- [BACK] / [EXIT] keys prohibited
- All keys including hard keys and remote controller keys are prohibited.

<When INITIALIZE terminated abnormally>

Determine error in each block of SYSTEM/ DISC/ BT.

- In case of Bluetooth, Initialize Error is also considered as abnormal termination

Discontinue process once NG is detected, and display the corresponding error as follows.

NG SYSTEM: Clearing of the unit set EEP (APP management and SYS management) terminated abnormally

NG DISC: Clearing of DISC module EEPROM terminated abnormally.

NG BT: BT module initialization terminated abnormally.

The below screen is retained until the [EXIT] key is pressed.

When the [EXIT] key is pressed, normal screen is brought back.

[EXIT] key: Return to the normal display by canceling the service mode.

4.2.2.2 TEMPERATURE

Displays DISC module temperature (displays in 3 digits).

Acquires data from the module and updates the display every 30 seconds, as is done in the normal operation mode.

4.2.2.3 RUNNING MODE

DVD MODE5: Displays the currently selected mode

COUNT: Counter display

DVD ERROR: Displays the error code for error in the DISC mecha (display as 000000 when there is no error)

DOOR ERROR: Displays the error code for error in the door mecha (display as 000000 when there is no error)

*Immediately after moving to the RUNNING MODE, hide the display of all the above. Display the above items after an item is selected.

[BACK] key: Goes back to the service mode. *Only valid before selecting an item. Not valid after a selection is made.

■Mode Cancel Key■

- DOOR MODE can be canceled using the EJECT hard key.
- DVD MODE can be canceled using the Power Off hard key.

(1) DOOR MODE

Execute Door mecha running mode 1.
(Not valid for models without door mecha.)
2th line display: DOOR MODE 1
3th line display: Display the number of runs in 6 digits.
4th line display: Nil
5th line display: Display as "000000" when there is no door mecha error, display the door mecha error code when an error has occurred.

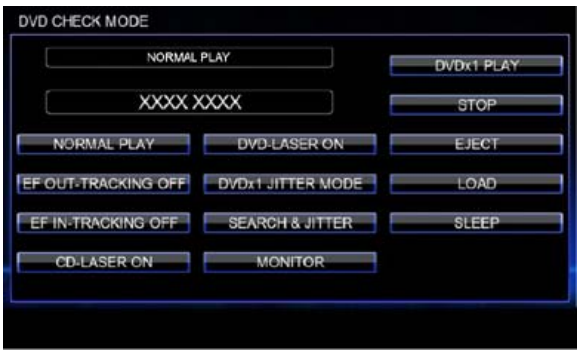
(2) DVD MODE 1 to 6

Execute DVD running mode 1 to 6
(For models with door mecha, OPEN/CLOSE the door in sync with DISC LOAD/EJECT.)
2th line display: DVD MODE 1
3rd line display: Display Arg 5,6,7 (BCD) of the "Unit request" (running status) received from DISC module in 6 digits.
4th line display: Display Arg 2,3,4 (HEX) of the Unit request (running status) received from DISC module in 6 digits.
5th line display:

<No door mecha>
Nil
<With door mecha>
Display as "000000" when there is no door mecha error. Display the door mecha error code in the event of an error.

4.2.2.4 DVD CHECK MODE

When this mode is selected, reset DISC module and restart in Check Mode. (Specify "Check Mode On" in the startup mode for 0x94 command.)
After restarting in Check Mode, transit to DVD CHECK MODE screen.
Directly touch the item to select the operation.
NORMAL PLAY: Displays the currently selected item
XXXX XXXX: Displays the data acquired from the mecha module (4 bytes) as it is.



- Immediately after moving to the DVD CHECK MODE, hide the display of all the above. Display the top 2 lines after an item is selected.
- DVD CHECK MODE is cleared by power OFF (Clear by ACC OFF/ BATTERY OFF/Detach).

(1) NORMAL PLAY
Process test item [1] of the check mode specification
2nd line display: NORMAL PLAY
3rd line display: Display Arg 2,3,4,5 (HEX) of the command received from the module, in the following format.

X X	X X	X X	X X
Arg2	Arg3	Arg4	Arg5

(2) EF OUT-TRACKING OFF
Process test item [2] of the check mode specification
2nd line display: EF OUT-TRACKING OFF
3rd line display: Nil

(3) EF IN-TRACKING OFF
Process test item [3] of the check mode specification
2nd line display: EF IN-TRACKING OFF
3rd line display: Nil

(4) CD-LASER ON
Process test item [4] of the check mode specification
2nd line display: CD-LASER ON
3rd line display: Display Arg 2,3,4,5 (HEX) of the command received from the module, in the following format.

X X	X X	X X	X X
Arg2	Arg3	Arg4	Arg5

(5) DVD-LASER ON
Process test item [5] of the check mode specification
2nd line display: DVD-LASER ON
3rd line display: Display Arg 2,3,4,5 (HEX) of the command received from the module, in the following format.

X X	X X	X X	X X
Arg2	Arg3	Arg4	Arg5

(6) DVDx1 JITTER MODE
Process test item [6] of the check mode specification
2nd line display: DVDx1 JITTER MODE
3rd line display: Display Arg 2,3,4,5 (HEX) of the command received from the module, in the following format.

X X	X X	X X	X X
Arg2	Arg3	Arg4	Arg5

(7) SEARCH & JITTER
Process test item [10] of the check mode specification
2nd line display: SEARCH & JITTER
3rd line display: Display Arg 2,3,4,5 (HEX) of the command received from the module, in the following format.

X X	X X	X X	X X
Arg2	Arg3	Arg4	Arg5

(8) MONITOR
Process test item [11] of the check mode specification
2nd line display: MONITOR
3rd line display: Display Arg 2,3,4,5 (HEX) of the command received from the module, in the following format.

X X	X X	X X	X X
Arg2	Arg3	Arg4	Arg5

(9) DVDx1 PLAY
Process test item [12] of the check mode specification
2nd line display: DVDx1 PLAY
3rd line display: Display Arg 2,3,4,5 (HEX) of the command received from the module, in the following format.

X X	X X	X X	X X
Arg2	Arg3	Arg4	Arg5

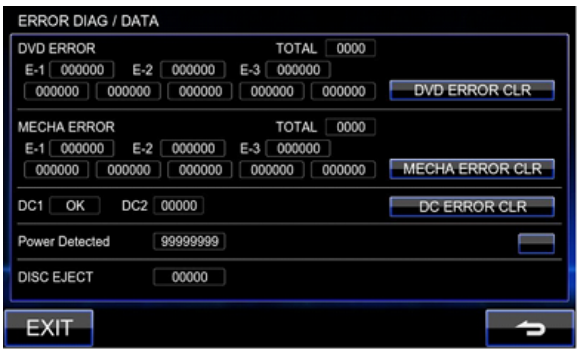
(10) STOP
Process test item [13] of the check mode specification
2nd line display: STOP
3rd line display: Nil

(11) EJECT
Process test item [14] of the check mode specification
2nd line display: EJECT
3rd line display: Nil

(12) LOAD
Process test item [15] of the check mode specification
2nd line display: LOAD
3rd line display: Nil

(13) SLEEP
Process test item [16] of the check mode specification
2nd line display: SLEEP
3rd line display: Nil

4.2.2.5 ERROR/DIAG DATA



[BACK] key: Goes back to the Service Mode

(1) DVD ERROR (DISC module error history)
By DISC module communication, acquire total error count, the most recent 3 errors, initial 5 errors, and display them.
(2) MECHA ERROR (door mechanism error history)
Read total error count, the most recent 3 errors, initial 5 errors from EEPROM, and display them.
(3) DC1 / DC2 (DC offset error history)
Read whether or not there is a DC1 error, and DC2 error count from EEPROM, and display them.
(4) Power Detected(********)
Read the number of times power supply was turned ON from EEPROM, and display the count.
Display as follows according to the counter value.
a) "Power Detected (counter value)" when counter value is 2 or higher
b) "No Detection(1)" when counter value is 1
c) "Detection Cleared!" when counter value is 0
(5) DISC EJECT **** times
By DISC module communication, acquire DISC EJECT count and display it.
(6) [DVD ERROR/DISC EJECT CLR] key
Clears the DVD ERROR history and DISC EJECT count. (Sends to DISC module EEPROM initialization command (also initializes error history).)
→Goes back to the Service Mode
(7) [MECHA ERROR CLR] key
Clears the door mechanism error history.
→Goes back to the Service Mode
(8) [DC ERROR CLR] key
Clears the DC1/2 error history.
→Goes back to the Service Mode
(9) [Power History CLR] key (Key with no character)
Clears the number of times power supply was turned ON.
→Goes back to the Service Mode

4.2.2.6 RDS TEST MODE

Screen for checking the setting and information for Radio Data System test mode.

4.2.2.7 HD/DAB TEST

Screen for checking the setting and information for HD/DAB test mode.
*The same key is used for DAB TEST and HD TEST; the key TOP display will be automatically switched on the corresponding models.

4.2.2.8 NR / EC

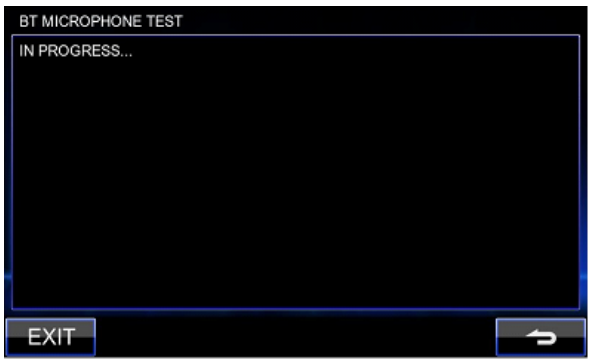
Mode for setting the speech quality of the hands-free microphone.

4.2.2.9 BT MICROPHONE TEST

The mode for confirming the normal operation of BT audio circuit by inputting audio from MIC and outputting from the speaker.
- Switch the audio selector to Bluetooth.
- Send Bluetooth Loop back START command to TCC.
- Send to TCC the command for setting Mic Gain, set at Gain 2 (fixed).

<While executing MICROPHONE TEST>

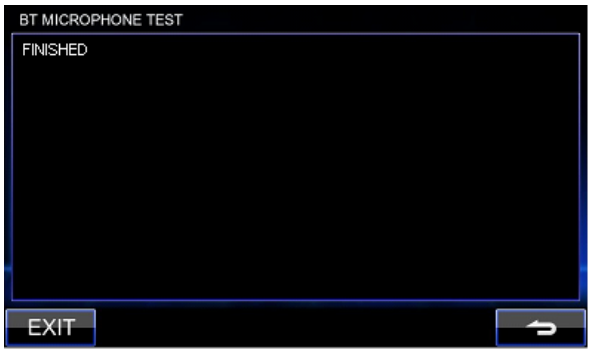
Retain the above screen until [EXIT] key or [BACK] key is pressed.



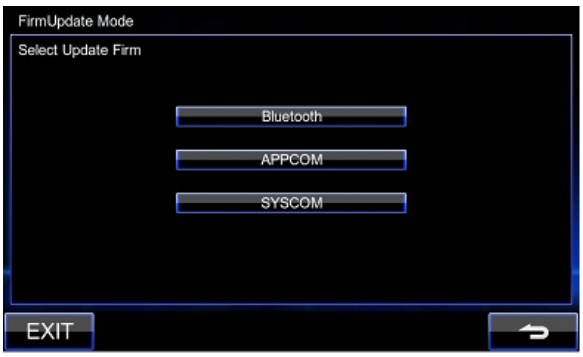
[EXIT] key or [BACK] key: Transition to the completed screen.

<MICROPHONE TEST completed>

This mode can be cleared only by turning the power OFF.
- [BACK] / [EXIT] keys prohibited

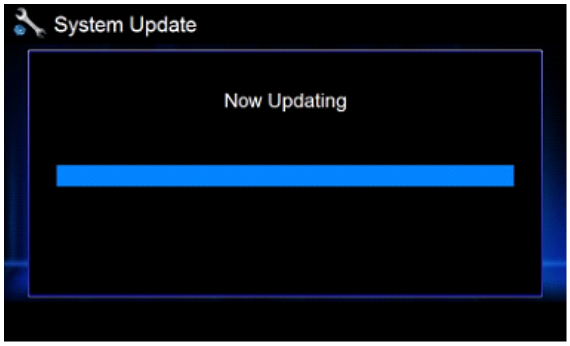


4.2.2.10 FIRM UPDATE MODE

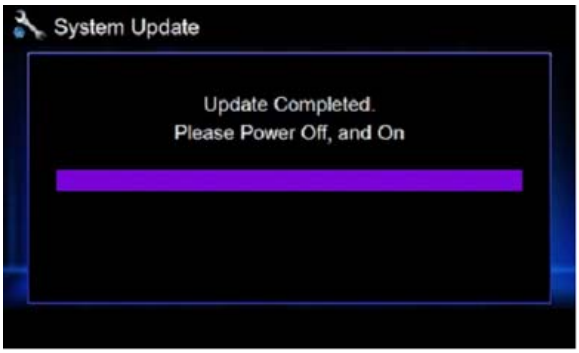


[BACK] key: Goes back to the Service Mode

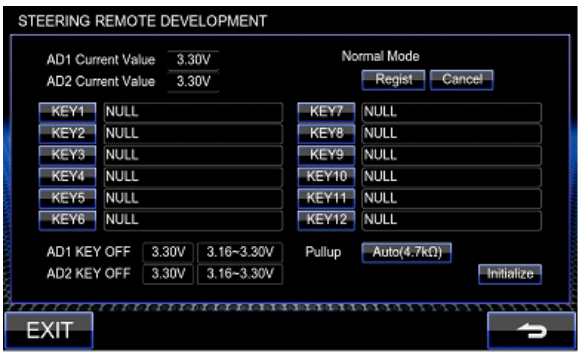
(1) [Bluetooth]/[APPCOM]/[SYSCOM]/[DAB] key
Perform Update when a USB device containing the Update data is inserted.
<Display during Update (Image)>



<Update Complete Display (Image)>



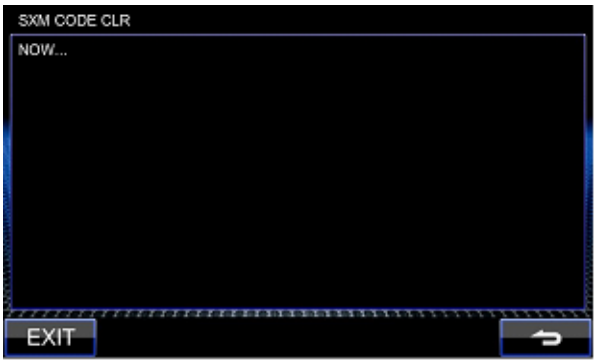
4.2.2.11 STEERING REMOTE DEVELOPMENT



[BACK] key: Goes back to the Service Mode

4.2.2.12 SXM CODE CLR

Mode for clearing the Sirius XM parental code
Press the KEY to start the clearing process. The screen switches to the following view.



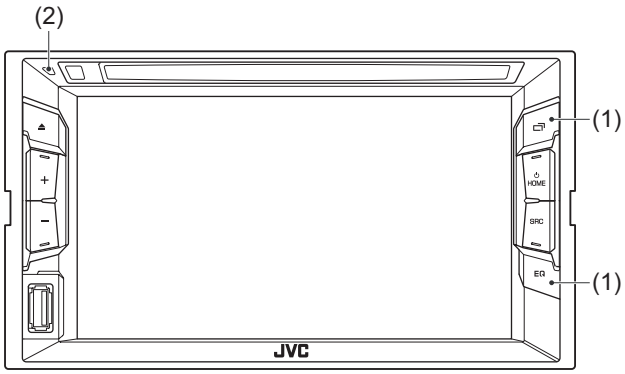
After the clearing process is complete, switch to the following screen.

[BACK] key: Returns to the SS mode or service mode screen
[EXIT] key: Exits the SS mode or service mode

4.3 SS mode

4.3.1 Switching to SS mode

Press and hold the [EQ] key and [DISP] key (1), and press the [RESET] key (2).



4.3.2 Clearing the SS mode

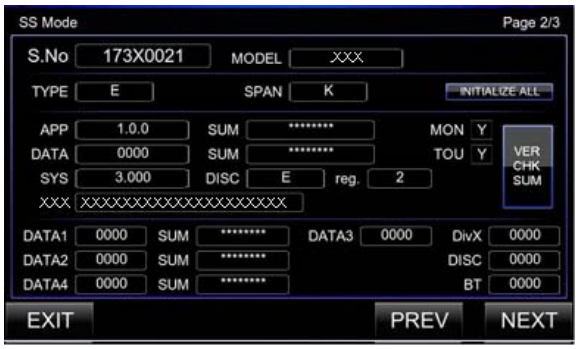
Performing one of the following operations cancels the production mode and restores the normal mode.

- Power off by battery (backup) OFF
- Reset

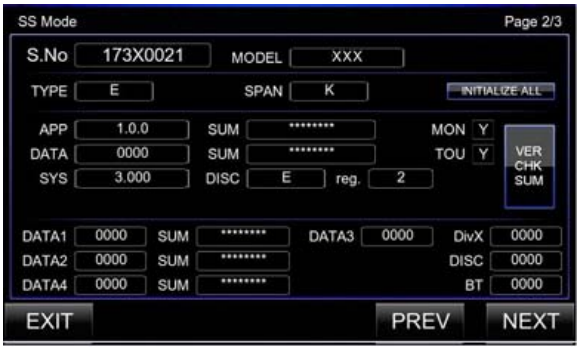
4.3.3 Display specifications

SS Mode Page1

SS Mode Page2 <DAB MODEL>



SS Mode Page2 <Except DAB MODEL>



SS Mode Page3

[NEXT] key: Switch from Page 1 → Page 2.
[PREV] key: Switch from Page 2 → Page 1.
[EXIT] key: Exit the SS Mode and return to the normal screen.

When any of the above SS mode screens is displayed (Page 1/3, 2/3, 3/3), set the audio selector to MUTE (equivalent to Stand-by source).
Upon exiting the SS mode to return to the normal mode, restore the audio selector to the original source.

Text	Description
SYS x.***	Display of system controller version. x:0(1S), 1(2S), 2(PP), 3(MP)
APP x.y.zzz	Display of system controller + design data version x:0 (release not been approved), 1 (release approved), y: rounded up by the official release, zzz: revision number managed by the SVN ("10" won't be expressed as "010") * The version system of DDX and that of KW-V are common.
DATA ****	Display of font data version.
DISC ****	Display of DISC mecha module version.
DivX ****	Display of DivX version.
BT ****	Display of BT module firmware version.
Span *	Display of Tuner's span selection status (NA or SA or EU or ASIA or BR or TN or JP).
Type	Display of destination information.
Model	Display of model information.
DISC-AREA	Display of area information of the DISC mecha module.
reg.	Display of region code.
HDR ********	Display of HD-Radio module version (HDR model only)
DAB ****/********	Display of DAB module version (DAB model only)
OK Display for All Items Above	When APP & DATA CHKSUM is executed, check against data in USB, and display OK or NG. *Not displayed if it is not executed. *Display NG in red.
MON: Y or N	Display of status of monitor adjustment by production line. Y: adjustment complete N: not adjusted. *Display NG in red.

Text	Description
TOU: Y or N	Display of status of touch panel adjustment by production line. Y: adjustment complete N: not adjusted. *Display NG in red.
SUM ********	Display of APP micro-controller program area's sum and check sum results. Check sum OK or NG. *Display NG in red.
SUM ********	Display of APP micro-controller design data area's sum and check sum results. Check sum OK or NG. *Display NG in red.
S.NO	Display of serial number. No entry: - - - - - - Model without serial no.: None Indicate "- - - - - -" in red. Models without serial no. are as follows. Destinations: J, JW, E, EE, A
DATA1 ****	Displays the opening data version.
SUM ********	Display of opening data area's sum and check sum results. Check sum OK or NG. *Display NG in red.
DATA2 ****	Displays the wallpaper data version.
SUM ********	Display of opening data area's sum and check sum results. Check sum OK or NG. *Display NG in red.
DATA3 ****	Displays the steering remote control threshold version.Displays the version number when threshold data is written using USB. For DOP models, display as follows as the value is fixed from the beginning. HONDA: KC MAZDA: KF MITSUBISHI: KG ISUZU: KJ NISSAN1: KS1 NISSAN2: KS2 TOYOTA: KL
DATA4 ****	Display of DEMO image version (Commercially=”1000”)
SUM ********	Display of opening data area's sum and check sum results. Check sum OK or NG. *Display NG in red.

4.3.3.1 INITIALIZE ALL

Same as service mode.

4.3.3.2 S/N WRITE & RGB(SXM) TERMINAL CHK

Mode for entering the serial number.
*This will not be displayed for models without the NAVI and Sxi terminals.

4.3.3.3 MONITOR ADJUSTMENT MODE

Mode for adjusting the image quality on the production line.
Display the following.
In this case, regardless of the current source, set Video selector to R-CAM, and display the external input video in the background.
(This is for adjustment by inputting composite signal in a white image from an external pattern generator.)
Restore the Video selector to the original state when exiting this adjustment mode.

- As adjustment is performed while pressing the sensor of the measuring instrument against the center of the monitor, display the adjustment button and STORE button on the Aright side of the screen.

Adjustment items are only 3 items, Drive R/G/B only, and pressing the STORE button writes the adjustment value into F. ROM.

4.3.3.4 BT MICROPHONE TEST

Same as service mode.

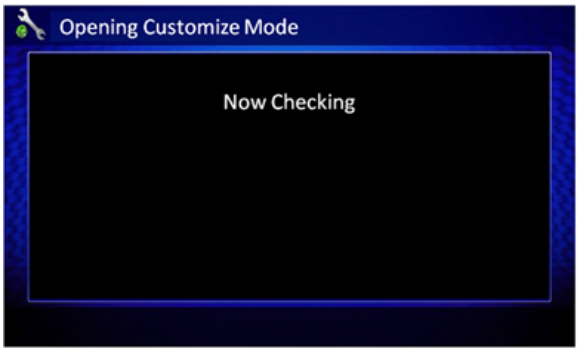
4.3.3.5 REGION CHANGE

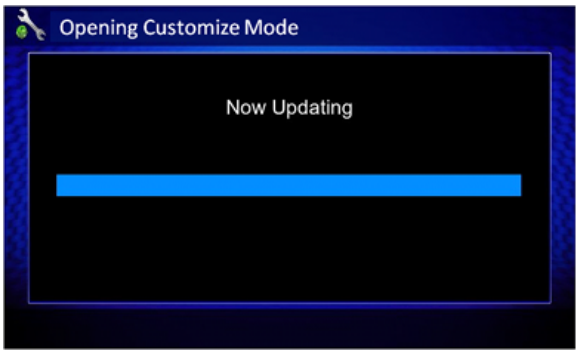
The mode for rewriting a Region Code.
Download the rewriting data from CUSiS.

- Extracts zip file.
- Find Vup_info.cds and ZZZ files.
- Write the 2 files to root of USB MEMORY.

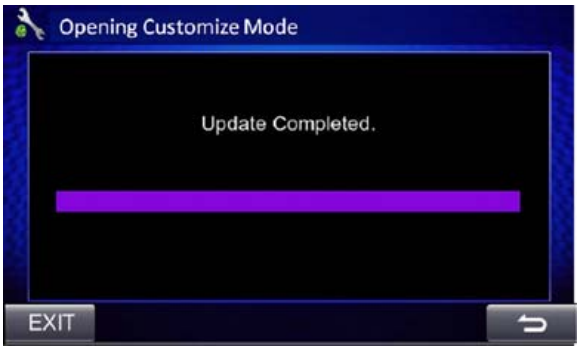
(1) Display the following if the USB device is inserted when this mode is selected.

(2) Start the update process after the insertion of the USB device is detected, and display the following.

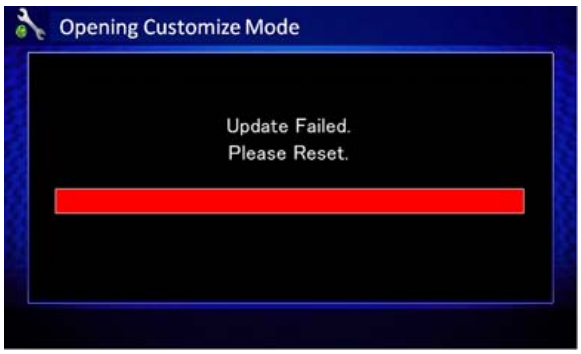




(3) Display the following when the update is completed.



(4) Display the following when the update is failed.



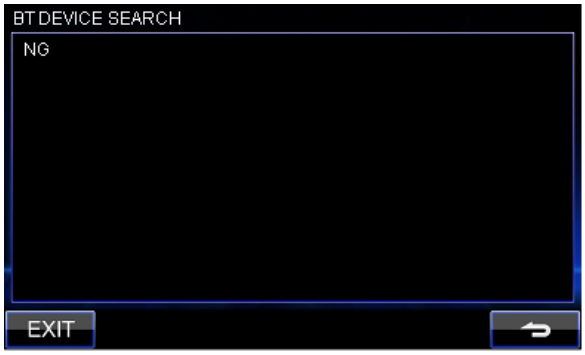
4.3.3.6 BT DEVICE SEARCH MODE

The mode to confirm if the Telechips module performs normal operations electronically.
Display the following if a communication of the BT module is performed normally when entering

<OK display>

[BACK] key: Returns to the SS mode or service mode screen
[EXIT] key: Return to normal screen
Display the following if the BT dongle cannot be correctly detected.

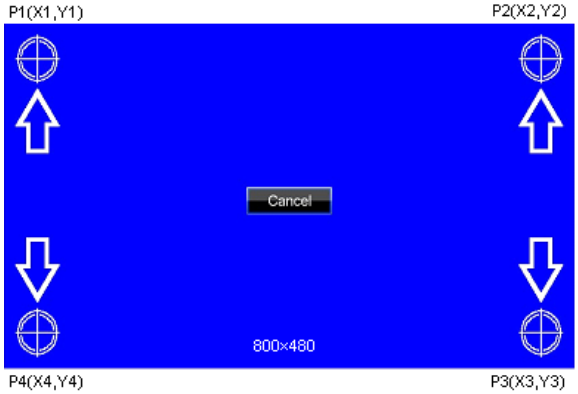
<NG display>



[BACK] key: Returns to the SS mode or service mode screen
[EXIT] key: Return to normal screen
Switch to the OK display if a communication to the BT module is performed normally while the above ERROR screens are displayed.

4.3.3.7 TOUCH PANEL CALIBRATION

Define the coordinates used in this sheet.



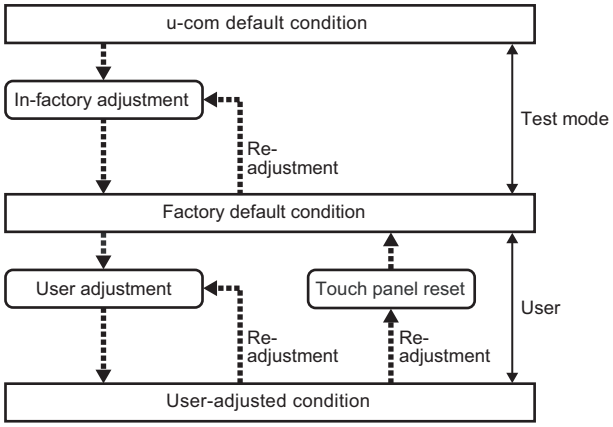
4.3.3.7.1 Touch adjustment (TOUCH ADJUST)

The 4 points on the screen, P1 (X1,Y1), P2 (X2,Y2), P3 (X3,Y3), P4 (X4,Y4) are the coordinate values (voltage values) actually read by touch adjustment.

The points shown on the adjustment screen have 2 dots, one for X and one for Y coordinate.

In normal mode touch adjustment, P2 and P4 coordinates are acquired. In test mode touch adjustment, coordinates of P1 to P4 are acquired (The reference point is lower left, whose coordinate value shall be (1,1).

4.3.3.7.2 Touch panel ADJUST specifications



Note 1: In normal mode touch adjustment, "RESET" on the touch adjustment screen resumes the data touch adjusted in the test mode.

Note2: Factory default adjustment should be cleared, and re-adjustment is enabled.

Note3: Users cannot RESET the factory default condition.

4.3.3.8 VER/CHECK SUM

Performs check on the version number of each micro-controller/ data and the SUM value of the APP program area/DATA area.
Select this item after inserting a USB device containing the check data for all of the above.
For details on the data format for checking, refer to "About Data for VER/CHECK SUM Checking".

(1) Version Number Check

Determines whether the version number retained within the set is consistent with that read from the USB device.
If the version number is consistent, display "OK" to the left of the version display. If it is not consistent, display "NG".
Perform version check on all items on SS Mode Page2/3 marked with "OK".
Consistent: "OK: 1.00.00"
Not consistent: "NG: 1.00.00"
Not checked: "1.00.00"
*Each time this item is selected, the latest result will be displayed.

(2) SUM Value Check

Calculate the SUM value for each of the APP program area and DATA area, and determine whether they are consistent with the SUM value read from the USB device.
If the value is consistent, display OK + SUM value. If it is not consistent, display NG + SUM value.
*Exclude DATA area for DOP (DATA1, DATA2, DATA3) from SUM calculation.

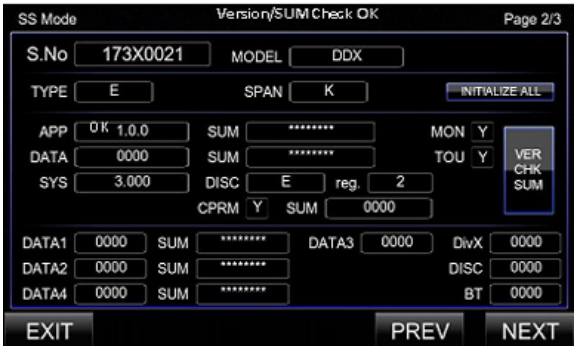
<CHKSUM OK>
ASUM OK ********(SUM value 4 bytes) ← Upper line shows CHKSUM result of program area
DSUM OK ********(SUM value 4 bytes) ← Lower line shows CHKSUM result of DATA area

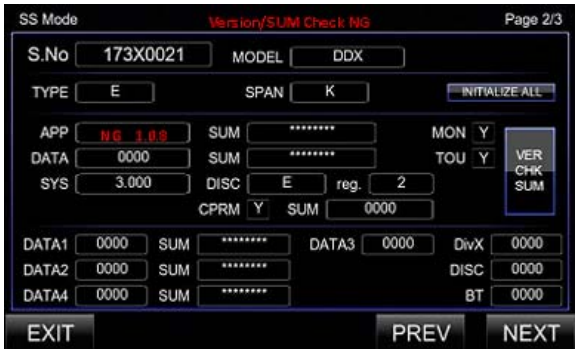
<CHKSUM NG (NG only for Data Area)>
ASUM OK ********(SUM value 4 bytes) ← Upper line shows CHKSUM result of program area
DSUM NG ********(SUM value 4 bytes) ← Lower line shows CHKSUM result of DATA area

<Not Calculated>
ASUM
DSUM

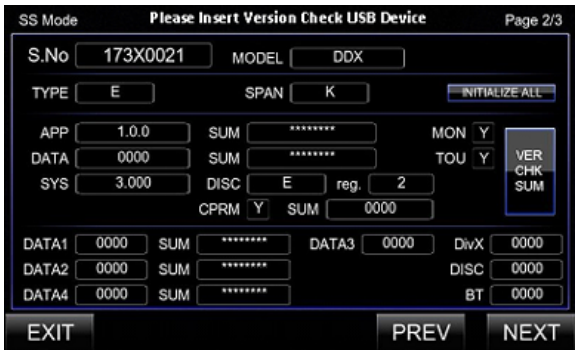
(3) TOTAL Assessment

Display TOTAL as OK only if all version checks and SUM values are OK, and all monitor adjustment, touch panel adjustment, and S meter adjustment are complete.
Display as NG if any one of these is NG.





(4) When USB device is not inserted
Display the following if a USB device is not detected when this item is selected.



4.3.3.8.1 About Data for VER/CHECK SUM Checking

VER/CHECK SUM is performed by reading out the checking data from the USB via the DISC mecha.
Data transfer from the DISC mecha employs the same mechanism as APP/SYS Firm UP, i.e., system controller UPGRADE operation.
Therefore, the two files below are stored in the USB memory.

- ver_check.txt ← Data for checking
- VUP_info.cds ← Information data for system controller UPGRADE

(1) Data Format for Checking
* Formed from the 20 lines of text data below.

Line No	Data Content	Description
1	Version Check	Header
2	[MODEL]DDX4R	Model name. Rewritten according to the model.
3	[TYPE]K	Destination code. Rewritten according to the shipment destination.
4	[SPAN]NA	SPAN information. Rewritten according to the initial span setting value.
5	[APP]1.0.0	APP micro-controller version No. (program + design)
6	[DATA]0001	Data version no. (font data)
7	[DATA1]V0001	DATA1 version No. (opening data)
8	[DATA2]V1111	DATA2 version No. (wallpaper data)
9	[DATA3]0001	DATA3 version No. (ST.Remo threshold data)
10	[DATA4]1000	DATA3 version No. (DEMO image data)
11	[SYS]3.000	SYSCOM version No.
12	[DISC_A]JC	DISC mecha destination code. Rewritten according to the shipment destination.
13	[DISC_R]1	DISC mecha region No. Rewritten according to the shipment destination.
14	[DISC_V]0010	DISC mecha version No. (program)
15	[DIVX]0009	DISC mecha DivX version
16	[BT]102	BT module version no.
17	[SUM_APP]316e6c88	SUM value for APP+design data
18	[SUM_DATA]0d871d52	SUM value for data area
19	[SUM_DATA1]070a951f	SUM value for DATA1 area
20	[SUM_DATA2]02e60645	SUM value for DATA2 area
21	[SUM_DATA4]02e60645	SUM value for DATA4 area
22	[DAB]V000/00000000 [HDR]V000000	[DAB] DAB module version No. [HDR] HDR module version No.
21	~END	Terminal marker

(2) Information Data Format for System Controller UPGRADE
* Formed from the 6 lines of text data below.

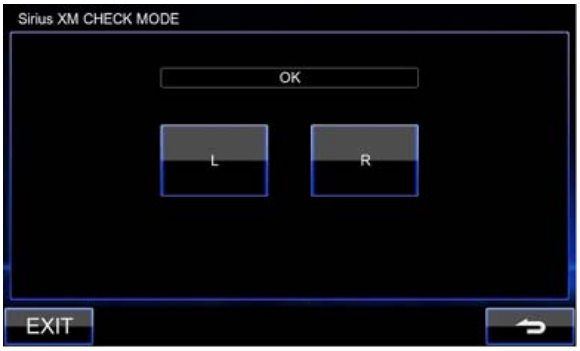
Line No	Data Content	Description
1	0001	Arbitrary (Version of data for checking)
2	3	Fixed at 3 (UPGRADE mode specification. 3 = system controller UPGRADE)
3	1	Fixed at 1 (Sub-mode specification. 1 = normal; 2 = Forced overwrite)
4	0	Fixed at 0 (Destination information. Specify as 0 other than DISC for changing destination.)
5	JVC_DV5/FMU-XM2-11	Arbitrary (File ID of data for checking)
6	ver_check.txt	File name of data for checking (including extension)

4.3.3.9 STEERING REMOTE CHK MODE

Mode for voltage check of Steering Remote terminal.

4.3.3.10 Sirius XM CHECK MODE

Mode for check of Sirius XM terminals.
By using the audio output from the internal oscillator of SXV100, it is possible to check all of the power lines / communication lines / audio line.



[L] key: Output to the L Channel voice of the internal oscillator. Each time the key is pressed, the audio ON → OFF is switched.
[R] key: Output to the R Channel voice of the internal oscillator. Each time the key is pressed, the audio ON → OFF is switched.
[OK] key / [NG] key: OK display when the audio output has successful.
NG display when the audio output has failed.

4.3.3.11 OPENING / ING CUSTOMIZE

Mode for customizing for DOP at the production line.

4.3.3.12 CHANGE INITIAL PARAMETER

Mode for customizing for DOP at the production line.

4.3.3.13 STEERING REMOTE CUSTOMIZE MODE

Mode for customizing for DOP at the production line.

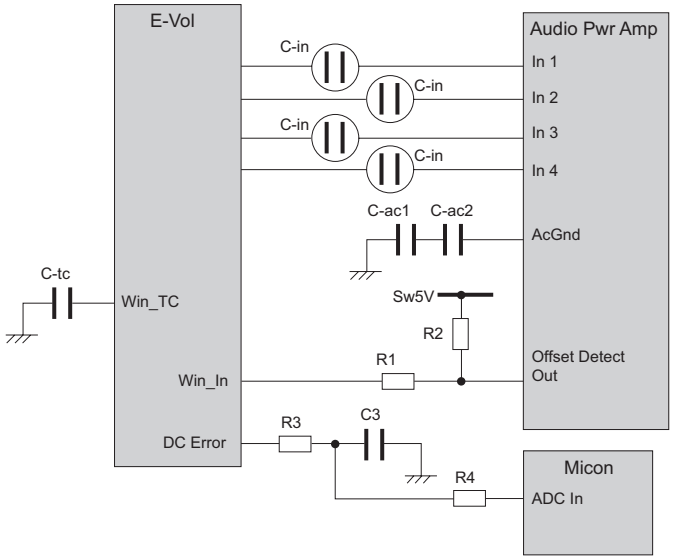
4.4 DC Offset error description

4.4.1 DC Offset detection circuit design

- Purpose:
  To prevent breakdown, when occur DC offset between speaker output "+" and "-".
- Target:
  Detect DC offset, then stop the Power Amp operation and shift to specified condition.

4.4.2 Possible causes of DC offset at speaker output lines

(1) Mis-connection for Speaker output for example touch to car body or battery line.
(2) Current leak of coupling capacitor for Power IC input.
(3) Current leak of AC-GND capacitor for Power IC AC-GND.
(4) Capacitor shorted of above parts due to foreign object.

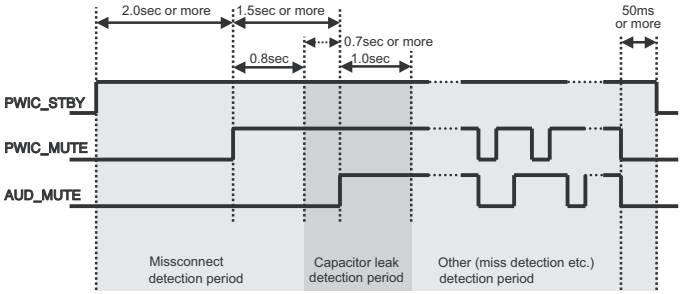


4.4.3 Type of checking

4.4.3.1 To detect DC Offset Error

- Mis-connection
  - Short any one speaker out line to GND or Vcc
- Capacitor leak
  - Parallel 330kΩ to either any one of coupling cap or AC-GND capacitor (to simulate current leakage of capacitor)
  - Shorted either any one of coupling capacitor or AC-GND capacitor.

4.4.4 Detection Timing chart



4.4.5 Manipulate after detect DC Offset

- If detected error 10 consecutive times, and 10th error occurred in "Mis-connect detection period", judge as "Mis-connect".
- If detected error 10 consecutive times, and 10th error occurred in "Capacitor leak detection period", judge as "Capacitor leak ".
- If detected error 10 consecutive times, and 10th error occurred in "Other detection period" and detected another 10 errors consecutively, then judge as "Other".
- If judge as "Mis-connect".
  - turn off speaker output.
  - display "MISWIRING", check wiring connection then reset.
  - key access disable except button of Eject, Reset and service mode
  - record error in EEPROM "DC1 ERR"
  - the product is able to be recovered by Reset button.
- If judge as "Capacitor leak ".
  - turn off speaker output.
  - display "WIRING", check wiring connection then reset.
  - key access disable except button of Eject, Reset and service mode
  - record error in EEPROM "DC2 #" (# means counter number)
  - the product can be recovered by pressing the Reset button before the capacitor leak error counter reach "DC2 4". After that, only clear the counter back to "0" can recover the product.
- If judge as "Other" (manipulation same as mis-connect)

SECTION 5
TROUBLESHOOTING

5.1 How to cancel DC offset error

Check to be sure the terminals of the speaker leads are covered with insulating tape properly, then reset the product.
If an error message does not disappear even after a reset, there is a need for internal repair.

5.2 How to clear DC offset error recorded in EEPROM

Refer to “4.2.2.5 ERROR/DIAG DATA”.

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